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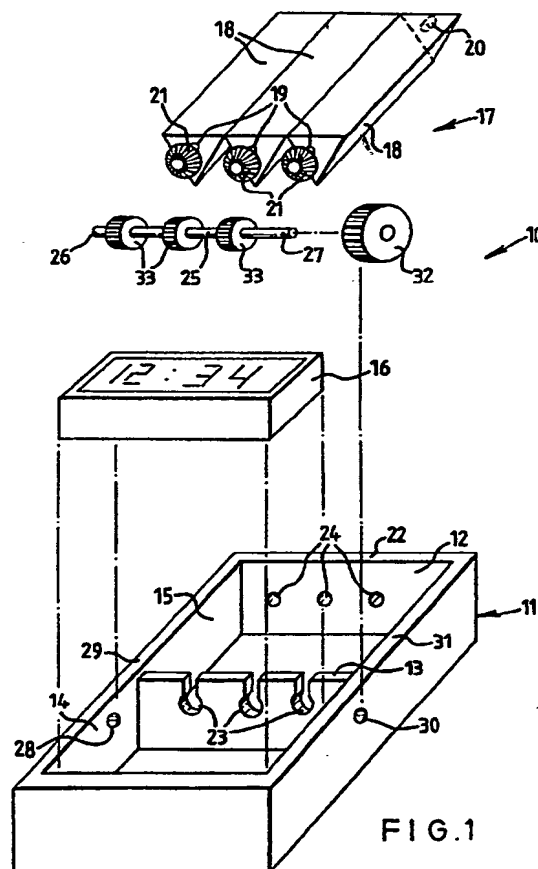
(56) Documents Cited

| | | |
|--------------|--------------|--------------|
| GB 0640288 A | GB 0360657 A | GB 0268484 A |
| US 4354260 A | | |

(58) Field of Search
UK CL (Edition L) G3T TA3 , G5C CAA CFF
INT CL⁵ G04B , G09F

(54) Time-piece.

(57) A time-piece (10) comprises a casing (11) having a front side (12) and a transparent cover covering the front side through which time is readable, a timing module or movement (16) provided within the casing (11), and manually operable display means (17) provided underneath the cover within the casing (11) for displaying static information and/or graphic patterns, said display means (17) including a manual operating member (32) exposed outside the casing (11) for changing the displayed information and/or graphic patterns. The display means (17) may be made up of a number of display members (18) of triangular cross-section. Alternatively, the display means may be made up of a number of display sheets (50, Figure 2) for carrying the information and/or graphic patterns. The time-piece (10) may be a wrist-watch.



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.



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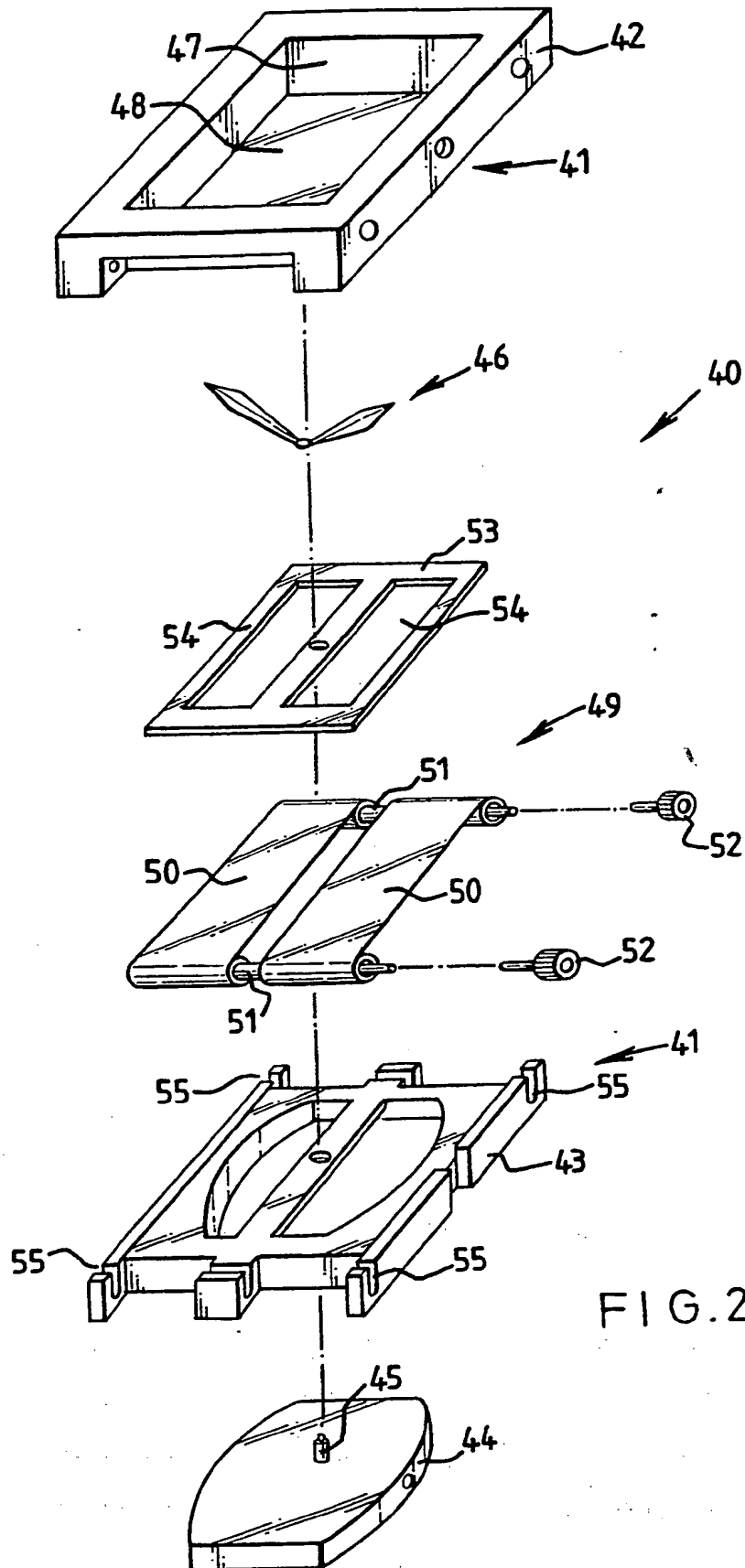


FIG. 2

TIME-PIECE

The present invention relates to a time-piece.

According to the invention, there is provided a time-piece which comprises a casing having a front side and a transparent cover covering the front side through which time is readable, a timing module or movement provided within the casing, and manually operable display means provided underneath the cover within the casing for displaying static information and/or graphic patterns, said display means including a manual operating member exposed outside the casing for changing the displayed information and/or graphic patterns.

It is preferred that the operating member is in the form of a turning knob provided on a peripheral side of the casing.

Preferably, the display means comprises a display member bearing the information and/or graphic patterns, said display member being rotatably mounted for rotation by operation of the operating member to change the displayed information and/or graphic patterns.

In a first preferred embodiment, the display means comprises a plurality of such display members which are rotatably mounted in a side-by-side manner for displaying complete information and/or graphic patterns and for

simultaneous rotation by the operation of the operating member to change the displayed information and/or graphic patterns.

5 More specifically, the display means comprises three such display members, each having an equi-triangular cross-section.

10 Preferably, each of the display members has a co-axial gear wheel, and the display means further includes a shaft connected with the operating member, said shaft carrying thereon co-axial gear wheels which are in mesh with the gear wheels of the display members such that rotation of the operating member and thus the shaft will simultaneously rotate the display members.

15 In a second preferred embodiment, the display member is in the form of a long sheet, and the display means further includes two spaced apart shafts, each of which is connected with a respective said operating member and upon which corresponding opposite ends of the sheet display member are rolled such that the information and/or graphic patterns borne thereon between the two shafts is displayed and is capable of being scrolled when the leading shaft is rotated by means of the associated operating member.

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More specifically, the timing movement includes a driving shaft and a plurality of time indicating hands supported by

the driving shaft, which time-piece includes two such sheet display members which have opposite ends thereof rolled upon the corresponding shafts and placed in a side-by-side manner for displaying complete information and/or graphic patterns, said movement driving shaft extending through
5 between the two sheet display members.

The time-piece may be in the form of a wrist-watch.

The invention will now be more particularly described, by way of example only, with reference to the accompanying
10 drawings, in which:

Figure 1 is an exploded perspective view of a first embodiment of a time-piece in accordance with the invention; and

Figure 2 is an exploded perspective view of a second
15 embodiment of a time-piece in accordance with the invention.

Referring firstly to Figure 1 of the drawings, there is shown a first time-piece in the form of a wrist-watch 10 embodying the invention, which wrist-watch 10 comprises a
20 box-like base casing 11 which has an open top (front) side 12 and is arranged to be closed from above by a top casing bearing a watch crystal (not shown). The base casing 11 has a transversely extending partition wall 13, dividing

the interior of the base casing 11 into front and rear (as shown) compartments 14 and 15. The wrist-watch 10 further includes an electronic LCD time display module 16 located within the front compartment 14 of the base casing 11 and
5 an information and/or graphic pattern display mechanism 17 located within the rear compartment 15.

The display mechanism 17 is formed by three elongate display members 18 which have an equi-triangular cross-section. Each of the display members 18 has a pair of co-
10 axial studs 19 and 20 at opposite front and rear ends thereof. The free end of each front studs 19 has an expanded co-axial bevel gear wheel 21.

The display members 18 are supported for rotation within the front compartment 14 of the base casing 11, in a close
15 side-by-side manner and extending from the partition wall 13 to a rear wall 22 of the base casing 11. At positions corresponding to the display members 18, the partition wall 13 has three notches 23 and the inner side of the rear casing wall 22 has three aligned blind holes 24. Each
20 display member 18 is rotatably supported with its front and rear studs 19 and 20 engaged in the corresponding notch 23 and blind hole 24.

The three bevel gear wheels 21 are disposed on the opposite, front side of the partition wall 13, where an
25 operating shaft 25 is supported parallel to the partition

wall 13. One end 26 of the operating shaft 25 is engaged in a blind hole 28 formed in the inner side of a left side casing wall 29, and the opposite end 27 thereof passes through a hole 30 formed in a right side casing wall 31. 5 A turning knob 32 is secured to the exposed end 27 of the operating shaft 25 to facilitate turning of the shaft 25.

The operating shaft 25 carries thereon three fixed bevel gear wheels 33 in mesh with the bevel gear wheels 21 of the corresponding display members 18, such that rotation of the 10 turning knob 32 and hence the operating shaft 25 will cause simultaneous rotation of the display members 18.

The three sides of each display member 18 bear certain information and/or graph patterns which are designed to match with that on the associated sides of the other two 15 display members 18. The arrangement is such that when the associated sides of the three display members 18 are turned to align co-planar on the top side of the base casing 11, a complete set of information and/or graphic pattern is displayed. It is appreciated that the displayed 20 information and/or graphic patterns can be changed by rotating the turning knob 32.

Referring now to Figure 2 of the drawings, showing another wrist-watch 40 embodying the invention, which wrist-watch 40 comprises a two-part casing 41 formed by upper and lower 25 casing parts 42 and 43, and an analogue quartz watch

movement 44 located from below within the lower casing part 43. The watch movement 44 has a driving shaft 45 passing upwards through the lower casing part 43 into the upper casing part 42 for drivingly supporting thereon hour, minute and second hands 46. The upper casing part 42 has an opening 47 across which a transparent watch crystal 48 is located.

The wrist-watch 40 further includes an information and/or graphic pattern display mechanism 49 sandwiched between the upper and lower casing parts 42 and 43. The display mechanism 49 is formed by two long sheet display members or display sheets 50 bearing certain information and/or graphic patterns and two front and rear (as shown) spaced-apart operating shafts 51 holding the display sheets 50 in a side-by-side manner and extending from the front to rear side of the casing 41. Each operating shaft 51 is rotatably supported at its ends by a pair of aligned notches 55 formed in left and right side walls of the lower casing part 43. Opposite ends of the display sheets 50 are rolled upon the corresponding front and rear operating shafts 51 such that the intermediate portions of the display sheets 50 are exposed to display the information and/or graphic pattern borne thereon.

The right ends of the operating shafts 51 are each provided with a turning knob 52 which is disposed outside the casing 41 for rotation by a user in order to scroll the display

sheets 50 up or down simultaneously so as to change the displayed information and/or graphic patterns. In either the scrolling up or down direction, it is necessary to rotate only the leading operating shaft 51.

5 The watch movement driving shaft 45 extends upwards through the gap between the two display sheets 50 before supporting thereon the time indicating hands 46. An opaque plate 53 is located between the hands 46 and the display mechanism 49, which plate 53 has two rectangular windows 54 for
10 exposing only the intermediate portions of the display sheets 50.

In the above described embodiments of the invention, the displayed information may include, for example, certain commonly used telephone numbers. The displayed graphic
15 patterns are selectable so as to change the design and/or eye apparel of the time-piece.

The invention has been given by way of example only, and various modifications of and/or alterations to the described embodiments may be made by persons skilled in the
20 art without departing from the scope of the invention as specified in the appended claims.

CLAIMS

1. A time-piece comprising a casing having a front side and a transparent cover covering the front side through which time is readable, a timing module or movement
5 provided within the casing, and manually operable display means provided underneath the cover within the casing for displaying static information and/or graphic patterns, said display means including a manual operating member exposed outside the casing for changing the displayed information
10 and/or graphic patterns.
2. A time-piece as claimed in claim 1, wherein the operating member is in the form of a turning knob provided on a peripheral side of the casing.
3. A time-piece as claimed in claim 1 or claim 2, wherein
15 the display means comprises a display member bearing the information and/or graphic patterns, said display member being rotatably mounted for rotation by operation of the operating member to change the displayed information and/or graphic patterns.
- 20 4. A time-piece as claimed in claim 3, wherein the display means comprises a plurality of such display members which are rotatably mounted in a side-by-side manner for displaying complete information and/or graphic patterns and for simultaneous rotation by the operation of the operating

member to change the displayed information and/or graphic patterns.

5 5. A time-piece as claimed in claim 4, wherein the display means comprises three such display members, each having an equi-triangular cross-section.

10 6. A time-piece as claimed in claim 4 or claim 5, wherein each of the display members has a co-axial gear wheel, and the display means further includes a shaft connected with the operating member, said shaft carrying thereon co-axial gear wheels which are in mesh with the gear wheels of the display members such that rotation of the operating member and thus the shaft will simultaneously rotate the display members.

15 7. A time-piece as claimed in claim 3, wherein the display member is in the form of a long sheet, and the display means further includes two spaced apart shafts, each of which is connected with a respective said operating member and upon which corresponding opposite ends of the sheet display member are rolled such that the information and/or graphic patterns borne thereon between the two shafts is displayed and is capable of being scrolled when the leading shaft is rotated by means of the associated operating member.

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8. A time-piece as claimed in claim 7, wherein the timing

movement includes a driving shaft and a plurality of time
indicating hands supported by the driving shaft, which
time-piece includes two such sheet display members which
have opposite ends thereof rolled upon the corresponding
5 shafts and placed in a side-by-side manner for displaying
complete information and/or graphic patterns, said movement
driving shaft extending through between the two sheet
display members.

9. A time-piece as claimed in any one of the preceding
10 claims, being in the form of a wrist-watch.

10. A time-piece substantially as hereinbefore described
with reference to Figure 1 or Figure 2 of the accompanying
drawings.

Relevant Technical Fields

- (i) UK Cl (Ed.L) G3T (TA3); G5C (CAA, CFF)
(ii) Int Cl (Ed.5) G04B: G09F

Search Examiner
R A H CASLING

Date of completion of Search
14 October 1993

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant
following a search in respect of
Claims :-
1-10

(ii)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

P: Document published on or after the declared priority date but before the filing date of the present application.

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E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

A: Document indicating technological background and/or state of the art.

&: Member of the same patent family; corresponding document.

| Category | Identity of document and relevant passages | | Relevant to claim(s) |
|----------|--|--|----------------------------------|
| X | GB 640288 | (SURDEZ) see page 1 line 28 et seq | Claim 1 at least |
| X | GB 360657 | (NICOHOSOFF) see page 4 line 34 et seq | Claims 1, 2, 3, 4 and 7 at least |
| X | GB 268484 | (UAC) see page 2 line 36 et seq | Claim 1 at least |
| X | US 4354260 | (PLANZO) see page 5 line 10 et seq | Claim 1 at least |

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